TIMOTHY M. SWAGER

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PROFESSIONAL POSITIONS:

Massachusetts Institute of Technology

John D. MacArthur Professor of Chemistry	July 1, 2005-Present
Director of the Deshpande Center for Technological Innovation	May 1, 2014-Present
Head of The Department of Chemistry	July 1, 2005-June 30, 2010
Founding Associate Director Institute for Soldier Nanotechnologies	June 1, 2002-June 30, 2005
Professor of Chemistry	August 1,1996-July 1, 2005

University of Pennsylvania

Professor of Chemistry	July 1, 1996-July 31, 1996
Assistant Professor of Chemistry	July 1, 1990-June 30, 1996

Massachusetts Institute of Technology

Postdoctoral Fellow, Advisor: Mark S. Wrighton	August 1988-July 1990

EDUCATION:

Ph.D., Chemistry, *California Institute of Technology* May 1988
Research Advisor: Robert H. Grubbs

B.S., Chemistry, With Highest Honors, *Montana State University* June 1983

PRINCIPAL RESEARCH INTERESTS:

Colloid Science, Electronic Materials, Chemical Sensors, Supramolecular Science, Polymer Science, Liquid Crystals, Synthetic Conductors, Molecular Recognition, Molecular Electronics, Photonics

AWARDS AND FELLOWSHIPS:

National Academy of Inventors Fellow 2020; Polymer Chemistry Award (ACS) 2019; Vannevar Bush Faculty Fellowship (DoD) 2018; Chandler Medal, Columbia University 2017; Pauling Medal 2016, Gustavus John Esselen Award for Chemistry in the Public Interest 2016; Humboldt Senior Research Award 2014; Council for Chemical Research-Diversity Award 2014; Fellow of the American Chemical Society 2013; Award for Creative Invention (ACS) 2013; Royal Society of Chemistry (UK) Centenary Prize 2012; Fellow of the Division of Polymer Chemistry (ACS) 2009; John Scott Award 2008; Elected to the National Academy of Sciences 2008; Honorary Doctorate of Science, Montana State University 2008; Lemelson-MIT Award for Invention and Innovation 2007; Elected to the American Academy of Arts and Sciences 2006; Christopher Columbus Foundation Homeland Security Award 2005; The Carl S. Marvel Creative Polymer Chemistry Award (ACS-Polymer Div) 2005; Clare Hall Visiting Fellow (U. Cambridge, England) 2005; Visiting Professor (Université Bordeaux) 2003; Vladimir Karapetoff Award (MIT) 2000; Cope Scholar Award (ACS) 2000; Union Carbide Innovation Recognition Award 1997-8; Philadelphia Section Award (ACS) 1996; Camille Dreyfus Teacher-Scholar 1995-1997; Alfred P. Sloan Research Fellow 1994-1996; DuPont Young Faculty Award 1993-1996; NSF-Young Investigator 1992-1997, Office of Naval Research Young Investigator 1992-1995, Lawton Chiles Postdoctoral Fellowship in Biotechnology (NIH) 1989; Herbert Newby McCoy Award For Outstanding Graduate Research (California Institute of Technology) 1988; Advanced Technologies Graduate Fellow (Aerojet General, General Motors, TRW) 1988; IBM Graduate Fellow 1984-1987; Most Outstanding Senior Chemistry Major (American Institute of Chemists) 1983; Merck Index Undergraduate Chemistry Award 1983

OTHER PROFESSIONAL ACTIVITIES:

Service to the Federal Government: National Academies Board on Chemical Sciences and Technology 2012-2018 (Co-Chair 2012-2015), TSA Blue Ribbon Panel, Project Newton 2009, Naval Studies Board 2009-2014, National Research Council Science & Technology Committee for Countering Terrorism 2002, Member of JIEDDO Standing Committee 2006-2007, Defense Science Board Task Force on Chemical Warfare Defense 2001-2002, National Science Foundation (Organizer: Materials Chemistry Workshop 1996, Review of Materials Chemistry 1997, Organizer US-UK Bilateral Assistant Professor Workshop 2004-2005), Organizer UK-US Conference on Chemical and Biological Sensors and Detectors 2007. Service on Numerous Other Panels for NIH, NSF, DoD, US Senate Commerce Committee.

Scientific Advisory Boards: Inkbit 2019- Via Separations 2017-2018; Advanced Research Center Chemical Building Blocks Consortium (Holland) 2016-2019; Nano-C Inc. Westwood, MA 2006-; ICx Technologies Science & Technology Council, Washington DC 2006-2010; Coatue Corp., Cambridge MA, 2001-2003; Mitsubishi Chemical Company, Tokyo 2002, Nomadics Inc., Stillwater OK and Cambridge MA, 2000-2005; Collegium Pharmaceutical Inc., Hingham, MA, 2001-4, Plextronics Inc. Pittsburgh PA, 2006-2014, E-ink, Cambridge MA, 1999-2002; Polaroid Corp., Cambridge MA, 1999-2002

Scientific Founder: Iptyx Corp., 2003-2009, (High Performance Polymers) Acquired by ICx Technologies; DyNuPol Inc., 2009-, Newton MA (Agents for Dynamic Nuclear Polarization Enhancement); PolyJoule, 2011-, Billerica MA (Energy Storage Devices); C_2 Sense, 2014-, Watertown MA (Gas Sensors); Xibus Systems, 2018- Watertown MA (Bacteria Detection Systems).

Editorial Advisory Boards: Chemistry of Materials 1997-2002; Accounts of Chemical Research 1998-2000, 2002-2014; J. of Polymer Science 1999-; J. Am. Chem. Soc. 2000-2002; Supramolecular Chemistry 2001-2006; Advanced Synthesis & Catalysis 2001-2010; J. Supramolecular Chemistry 2001-2006; Associate Editor of Synfacts, 2005-, Chemistry Letters 2010-, Associate Editor of Macromolecules 2010-2019, Angewandte Chemie International Advisory Board 2017-2020

PUBLICATIONS

1. Cardellina, J. H. and Swager, T. M. "Native American Food and Medicinal Plants. Part 5. Isolation of the Lipid Altering Visnagin From *Musineon divaricatum,*" *J. Nat. Prod.* **1984**, 47(6), 1060.
2. Swager, T. M. and Cardellina, J. H. "Native American Food and Medicinal Plants. Part 4. Coumarins From *Musineon divaricatum,*" *Phytochemistry* **1985**, 24(4), 805-813.
3. Swager, T. M. and Grubbs, R. H. "Synthesis and Properties of a Novel Cross-Conjugated Conductive Polymer Precursor: Poly(3,4-diisopropylidenecyclobutene)," *J. Am. Chem. Soc.* **1987**, 109, 894-896.
4. Swager, T. M., Dougherty, D. A. and Grubbs, R. H. "Strained Rings as a Source of Unsaturation: Polybenzvalene, a New Polyacetylene Precursor," *J. Am. Chem. Soc.* **1988**, 110, 2973-2974.
5. Swager, T. M. and Grubbs, R. H. "New Morphologies of Polyacetylene From the Precursor Polymer Polybenzvalene," *J. Am. Chem. Soc.* **1989**, 111, 4413-4422.
6. Swager, T. M. and Grubbs, R. H. "The Synthesis of Low Crystallinity Polyacetylene From The Precursor Polymer Polybenzvalene," *Synthetic Metals* **1989**, 28, D57-D62.
7. Kim, S. S., Cebe, P., and Swager, T. M. "Electron Spin Resonance Optical Spectroscopic Studies of The Conducting Polymer Precursor: Poly(3,4-diisopropylidene cyclobutene)," *J. Poly. Sci. B: Poly. Phys. Ed.* **1989**, 27, 443-463.
8. Swager, T. M., Rock, M. M. and Grubbs, R. H. "Polyquinone Bisketals: Precursors to New Conductive Polymers," *New Polymeric Materials* **1990**, 2, 1-10.
9. Serrette, A. G.; Carroll, P. J.; Swager, T. M. "Tuning the Intermolecular Dative Bonds Between Metallomesogens: Formation of a New Kind of Liquid Crystalline Polymer with a Metal-Oxo Linear Chain Structure" *J. Am. Chem. Soc.* **1992**, 114, 1887-8.
10. Lai, C.K.; Serrette, A.; Swager, T. M. "Discotic Bimetallomesogens: Building Blocks for the Formation of New Columnar Arrangements of Transition Metals" *J. Am. Chem. Soc.* **1992,** 114, 7948-7949.
11. Xu, B., Swager, T. M. "Rigid Bowlic Liquid Crystals Based on Tungsten-Oxo Calix[4]arenes: Host-Guest Effects and Head-to-Tail Organization" *J. Am. Chem. Soc.* **1993**, 115, 1159-1160.
12. Zheng, H.; Carroll, P. J.; Swager, T. M. "The Development of Polar Discotic Metallomesogens: Vanadyl 1,3-Diketonate Complexes" *Liquid Crystals*, **1993**, 14, 1421-9.

13. Serrette, A. G.; Swager, T. M. "Controlling Intermolecular Associations with Molecular Superstructure: Polar Discotic Linear Chain Phases" *J. Am. Chem. Soc.* **1993**, 115, 8879-8880.
14. Marsella, M. J.; Swager T. M. "Designing Conducting Polymer-Based Sensors: Selective Ionochromic Response in Crown Ether Containing Polythiophenes" *J. Am. Chem. Soc.* **1993**, 115, 12214-5.
15. Zheng, H.; Swager, T. M. "Octahedral Metallomesogens: Liquid Crystallinity in Low Aspect Ratio Materials" *J. Am. Chem. Soc.* **1994**, 116, 761-2.
16. Zheng, H.; Lai, C. K.; Swager, T. M. "Transition Metals in Highly Correlated Discotic Phases: Designing Metallomesogens With Selected Intermolecular Organizations" *Chem. Mater.* **1994**, 6, 101-103.
17. Zhou, Q.; Carroll, P. J.; Swager, T. M. "Diacetylene Macrocycles Derived From 1,2-Diethynylbenzene Derivatives: Structure and Reactivity of the Strained Cyclic Dimer" *J. Org. Chem.* **1994**, 59, 1294-1301.
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19. Serrette, A. G.; Lai, C. K.; Swager, T. M. "Complementary Shapes in Discotic Liquid Crystals: Structural Control in Homo- and Heteronuclear Bimetallic Assemblies" *Chem. Mater.* **1994**, 6, 2252-2268.
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22. Swager, T. M.; Marsella, M. J. "Molecular Recognition and Chemoresistive Materials" *Adv. Mater.* **1994**, 6, 595-7.
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26. Zhu, S.; Swager, T. M. "Lyotropic Mesomorphism in Oxo-Vanadium Complexes" *Adv. Mater.* **1995**, 7, 280-283.
27. Xu, B.; Swager, T. M. "Host-Guest Mesomorphism: Cooperative Stabilization of a Bowlic Columnar Phase" *J. Am. Chem. Soc.* **1995**, 117, 5011-12.
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29. Zhou, Q.; Swager, T. M. "Methodology for Enhancing the Sensitivity of Fluorescent Chemosensors: Energy Migration in Conjugated Polymers" *J. Am. Chem. Soc.* **1995**, 117, 7017-7018.
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33. Zhou, Q.; Swager, T. M. "Probing Delocalization Across Alkyne Containing Linkages: Synthesis and Cyclic Voltammetry of Bridged Phenylene Diamines" *J. Org. Chem.* **1995**, 60, 7096-7100.
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39. Zhu, S. S.; Swager, T. M. "Design of Conducting Redox Polymers: A Polythiophene-$Ru(bipy)_3^{n+}$ Hybrid Material" *Adv. Mater.* **1996**, 8, 497-500.
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83. Wang, Y. Z.; Sun, R. G.; Meghdadi, F.; Leising, G.; Swager, T. M.; Epstein, A. J. "Color Variable Multilayer Light Emitting Devices Based on Conjugated Polymers and Oligomers" *Synth. Met.* **1999**, 102, 889-892.
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INVITED LECTURES:

Since 1990 Swager has given over 400 university/industrial lectures and more than 300 invited, plenary, or keynote lectures at professional meetings.

Selected Named University Lectureships

Class of 1960 Lecture, Williams College 1998
Mona Zacharia Lecture, University of Rhode Island 1999
Merck Frosst Lecture, University of Ottawa, 2000
Hall Lecture Series, Bowling Green State University 2002
Boerhinger-Ingelheim Lecturer, Colorado State University 2003
Five College Lecturer, U. Mass. Amherst, Smith, Hampshire, Amherst, Mt. Holyoke, 2004.
Jerome Berson Lecture, Yale University 2004
Merck Frosst Lecture, University of Alberta, 2007
Rohm and Haas Lecturer, Pennsylvania State University, 2007
Guthikonda Lecture, Columbia University 2007
Dawson Lecture, University of Kentucky 2007
Hirshmann Lectures, University of Wisconsin 2008

John Wiley Jones Distinguished Lecturer, Rochester Institute of Technology 2008
Nakamoto Lecture, Marquette University 2008
Barré Lecturer, University of Montreal 2009
Powell Lecturer, University of Richmond 2009
Troisième Cycle Lecturer, Switzerland 2009
Distinguished University Lecturer, University of York (UK) 2009
Bayer Lecturer, Cornell University 2010
MacLean Lectureship, McMaster University 2010
Lundbeck Lecturer, Université de Sherbrooke 2010
Ingold Lecture, Steacie Institute for Molecular Sciences, Ottawa 2010
Konarka-Tripathy Lecture, University of Massachusetts, Lowell 2010
Frontiers in Chemistry Lecturer, Case Western Reserve University 2011
Arnold Lecture, University of Southern Illinois, Carbondale 2011
Haines Lecture, University of South Dakota 2011
John D. Roberts Lecture, California Institute of Technology 2011
Raucher Memorial Lecture, Rensselaer Polytechnic Institute, 2011
Herron Lecture, Florida State University, 2012
J. T. Donald Lectures, McGill University 2012
Joullie Lecture, University of Pennsylvania, 2012
Harold A. Iddles Lectures, University of New Hampshire, 2012
George Wheland Lecture, University of Chicago, 2013
Sackler Lecturer, Tel-Aviv University, 2013
William Dauben Lecture, University of California, Berkeley, 2013
Roseman Lecture, Johns Hopkins University 2013
Aldrich Lecture, Georgia Institute of Technology 2013
Lind Lecture, University of Tennessee and Oakridge National Laboratory, 2015
Jones Lecture, Queens's University, 2015
Ritter Memorial Lecture, Miami University 2015
Dow/Karabatsos Lecturer, Michigan State University 2016
Jean Dreyfus Boissevain Lectureship, Harvey Mudd College, 2016
Lord Lewis Lectureship, University of Cambridge, UK, 2016
Lemieux Lecturer, University of Ottawa, Canada, 2016
Chute Lecturer, Dalhousie University, Halifax Canada 2016
Aggarwal Lecturer in Polymer Chemistry, Cornell University, 2017
YeeFong Lecturer, National Taiwan University, Taipei Taiwan, 2017
Global Lecturer, Zhejiang University, Hangzhou China, 2017
Chandler Medal Lecture, Columbia University 2017
Lord Lecturer, Allegheny College 2018
Carl S. Marvel Lecturer, University of Illinois, Urbana Champaign 2018
GM Distinguished Lecturer, Rensselaer Polytechnic Institute 2019
Scripps Research Frontiers in Chemistry 2020